

ABSTRACT

A mask (stencil) having cells (openings) is disposed on a surface of a heater stage, and is then filled (printed) with solder paste. Then a substrate is assembled to the opposite side of the mask. Then the solder paste is reflowed. This may be done partially inverted. Then the mask is separated from the substrate, either before or after cooling. Solder balls are thus formed on the substrate, which may be a semiconductor wafer. A biased chuck urges the substrate into intimate contact with the mask. A method for printing the mask with solder paste is described. Methods of forming high aspect ratio solder bumps (including balls and reflowable interconnect structures) are described.